

COURSE DESCRIPTION
FINANCIAL MATHEMATICS MA 484/584
FALL 201X

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor P. Jung
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Prereqs: MA 227, MA 260, and MA 485
Textbook: *Mathematics for Finance* by Capiński and Zastawniak

Topics

- 1 The notion of no arbitrage
- 2 Interest, compounding, bonds
- 3 Review of mean, variance, and covariance
- 4 Portfolio management: risk and return
- 5 Forwards and Futures
- 6 Put-call parity
- 7 Martingales and conditional expectation
- 8 The binomial model
- 9 Fundamental theorems of asset pricing
- 10 Brownian motion (heuristics)
- 11 Itô's formula and Girsanov's theorem (heuristics)
- 12 The Black-Scholes-Merton formula
- 13 Interest rates
- 14 The binomial model for stochastic interest rates

Assessment procedures: HW 35%, Midterm 30%, Final 35%.

MA 592 students will have additional assignments as well as an additional portion on the Final Exam.